

### Remarks

Claims 5-19 are pending.

Claims 1-4 are cancelled

Claims 5-19 are rejected under 35 USC 103(a) as being unpatentable over Jones et al. (US Patent No. 4,906,843).

### Claim Rejections 35 USC § 112

Claims 5-9 are rejected under 35 USC 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification describes a computer mouse and a printer carriage as examples of devices including improved optical windows. *Application, p. 2, ll. 13-17, and p. 3, ll. 19-35.* Claim 5 is directed to an improved optical wheel. The computer mouse described in the specification includes an embodiment of the improved optical wheel. Thus, one skilled in the art may see claim 5, then read in the specification from page 3, line 32 to page 4, line 5 for information regarding an optical window, and read the examples of the computer mouse as an embodiment of the optical wheel using the optical window. With such information and examples, one skilled in the art would understand how to make and use the invention.

In addition, the Examiner questioned how an improvement can comprise a window, where the "improvement" is not a device or apparatus. Claim 5 is directed towards "an optical wheel". The additional language of claim 5 explains the novel features of the windows of the optical wheel. It is not the concept of the "improvement" that is claimed, but an apparatus including the "improvement". Thus, claim 5 describes an improved apparatus.

Furthermore, the Examiner is directed towards 37 CFR § 1.75 (e). “Where the nature of the case admits, as in the case of an improvement, any independent claim should contain in the following order: (1) A preamble comprising a general description of all the elements or steps of the claimed combination which are conventional or known, (2) A phrase such as "wherein the improvement comprises," and those elements, steps, and/or relationships which constitute that portion of the claimed combination which the applicant considers as the new or improved portion.”

Accordingly, the Applicant requests that the Examiner withdraw the rejections of claims 1-9.

### **Claim Rejections**

Claims 5-19 are rejected under 35 USC 103(a) as being unpatentable over Jones et al. (US Patent No. 4,906,843).

In rejecting claims 5, 10, and 15, the Examiner cited *In re Dailey*, 149 USPQ 47 (CCPA 1966) for the premise that a change in form or shape is normally not directed towards patentable subject matter. However, in *In re Dailey*, “Appellants have presented no argument which convinces us that the particular configuration of their container is significant or is anything more than one of numerous configurations a person of ordinary skill in the art would find obvious.” *In re Dailey*, 149 USPQ 47, 50.

In contrast, the Applicant submits herewith a Declaration under Rule 1.132 of Scott A. Prah, Ph.D. Dr. Prah received his doctorate from the University of Texas and has 16 years experience in academic and applied optics research. Dr. Prah has reviewed the application as filed and has concluded that the particular configuration of hourglass-shaped optical windows—

as recited in Applicant's independent claims 5, 10 and 15—is not immediately obvious for improving a shape of a waveform in an optical device. Dr. Prah1 concluded that if a merely narrower rectangular shape was used, power efficiency is decreased because less light is collected. In addition, Dr. Prah1 concluded that a circular aperture would maximize transmission, but would smooth the waveform and decrease the rate of transition.

Thus, a person of ordinary skill in the art would not narrow the window because of the reduced efficiency, and would not widen window, as in the circular window, because of the reduced rate of transition. In contrast, in an hourglass shaped optical window, it is the combination of narrowing at the center and widening at the top and bottom of the window that results in an improved shape. A person of ordinary skill in the art would not have combined the concept of these two features that alone have undesirable effects. As a result, the claimed optical window is outside the numerous configurations a person of ordinary skill in the art would find obvious for the purpose of providing optical windows.

Furthermore, the Examiner is improperly relying on legal precedent for support of the rejection under 35 USC 103(a).

2144.04 Legal Precedent as Source of Supporting Rationale [R-1]

As discussed in MPEP § 2144, if the facts in a prior legal decision are sufficiently similar to those in an application under examination, the examiner may use the rationale used by the court.... If the applicant has demonstrated the criticality of a specific limitation, it would not be appropriate to rely solely on case law as the rationale to support an obviousness rejection. (MPEP 2144.04 )

In *In re Dailey*, claim 25 of the Appellant included a disposable plastic nursing container, whereby the bottom section readily collapses such that in the collapsed condition, the bottom section is closely mated with the top section. *In re Dailey*, 149 USPQ 47, 48. The Matzen reference included a bottle with a flexible part being drawn into the rigid part. *Id.* at 49. The change in shape was the change in the shape of the mating surfaces of the rigid part to the

flexible part. *Id. at 50.* The facts in *In re Dailey* involve a change in shape of mating surfaces of nursing containers, not optical windows. Thus, the Examiner should not use the rationale from *In re Dailey*.

However, even if the rationale from *In re Dailey* is used, that rationale is not that any change in form or shape is obvious to one of ordinary skill in the art. The rationale is that a change in form or shape may be obvious if there is no convincing argument that the change in form or shape is not an obvious configuration. *Id. at 50.* Thus, every change in form or shape is not immediately obvious. The Applicant has provided arguments above in conjunction with the declaration that the hourglass shape of the window is not obvious.

Even when using the rationale of a prior legal decision the Examiner is not relieved of the requirements of making a prima facie case of obviousness. MPEP § 2142 describes three basic criteria to establish a prima facie case of obviousness: “First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.”

The Examiner argued that a change in form or shape of well known elements is normally not directed toward patentable subject matter. Thus, there are some changes in form or shape that are directed toward patentable subject matter. The criteria for making the decision are still the three basic criteria to establish a prima facie case of obviousness. The Examiner has not argued what the suggestion or motivation would be to change the triangular optical window of Jones into an hourglass shaped optical window as used in claims 5, 10, and 15. Thus, the

Examiner has not made a prima facie case of obviousness for claims 5, 10, and 15, and the dependent claims 6-9, 11-14, and 16-19.

Claim 20 includes a light path defined by an axis intersecting a light source along which an intensity of the light is substantially a maximum. In addition, claim 20 includes a plurality of optical windows, each optical window having a first side, a second side disposed opposite the first side, where the first and second sides are shaped such that points on the first side and points on the second side are disposed at varying distances. Each optical window also includes a minimum distance line defined by a point on the first side and a point on the second side having a minimum distance between each other. In addition, when the light path intersects one of the optical windows, the minimum distance line of the optical window substantially intersects the light path.

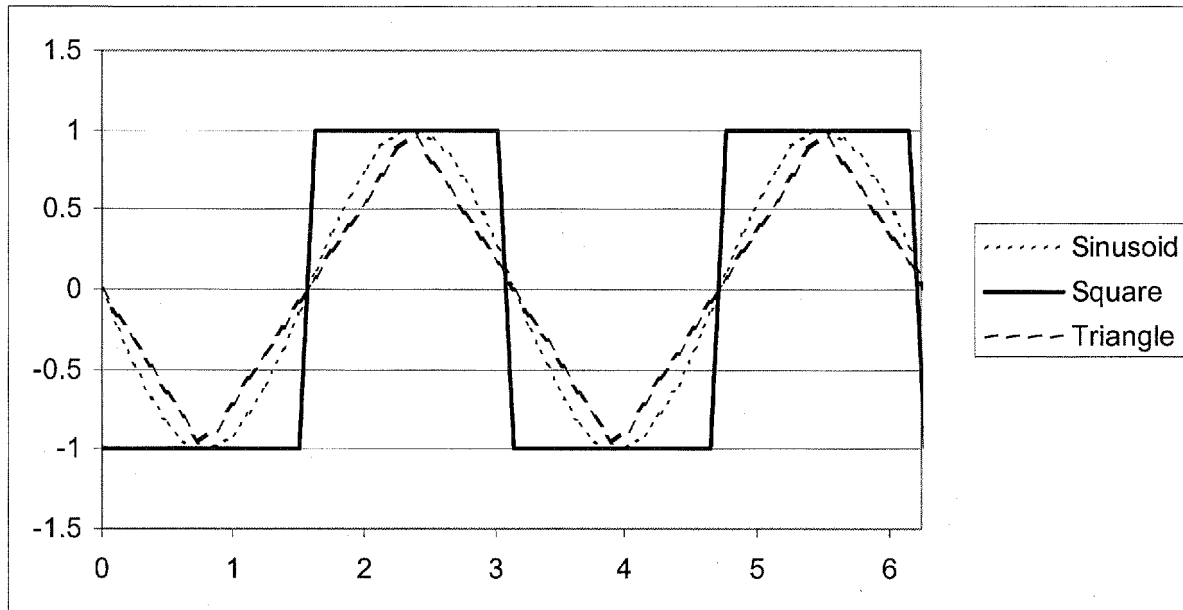
As can be seen in FIGs. 3a and 3b of Jones, the transparent sectors of the encoder discs 58 and 60 become more narrow towards the center of the disks. *Jones, col. 5, ll. 15-27*. Thus, a minimum distance line for one of the transparent sectors would be near the center of the disc. Although Jones describes an emitter/detector pair that has its beam intercepted by the sectors of the disk, there is no mention of a light path that has a substantially maximum intensity intersecting the center of the disk, where a minimum distance line would be. *Jones, col. 5, ll. 56-68*. In addition, no such light path is suggested in Jones. As a result, Jones does not teach or suggest each and every element of claim 20 and dependent claims 21-23.

In claim 21, at a position when the light path intersects the optical window, the light passes through multiple lines perpendicular to a centerline of the optical window. The centerline of the optical window is disposed between the first side and the second side. The first and second sides of each optical window are shaped such that intensities of the light passing through

the lines are substantially equal to each other. Although Jones discloses that the outer half of the disk 58 lets the same amount of light through as the corresponding portion of the disk 60, the comparison is between light that passes through two different disks, not a single optical window. Jones does not teach or suggest any substantially equal intensities across multiple lines within a single optical window. *Jones, col. 6, ll. 10-13*. As a result, Jones does not teach or suggest each and every element of claim 21

Claim 22 is similar to claim 21 in that there are substantially equal intensities of light associated with lines perpendicular to a centerline. However, the lines of claim 22 are on the detector and the light is incident on the detector at the associated lines. Nowhere in Jones are substantially equal intensity lines disclosed in connection with a detector. As a result, Jones does not teach or suggest each and every element of claim 22.

In claim 23 a light intensity at the detector is measured versus a position of the optical element. The first and second sides of each optical window are shaped such that when the optical element moves relative to the light path, that light intensity has a shape substantially between a sinusoid and a square wave. As can be seen from FIGs. 6a and 6b of Jones, illustrating the output of the detectors, the curves have almost linear segments from the maximums to the minimums. A triangle wave has linear segments between its maximums and minimums. Thus, the curves of Jones are closer to a triangle wave than a sinusoid. As can be seen in the following chart, Chart 1, a triangle wave is outside of the area between a sinusoid and a square wave.



**Chart 1: Comparison of Triangle Wave, Square Wave, and Sinusoid**

As a result, Jones does not teach or suggest each and every element of claim 23.

For the foregoing reasons, reconsideration and allowance of claims 5-23 of the application as amended is requested. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

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Respectfully submitted,

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